

What is claimed is:

- 1 1. A method for copying information from a storage system to a
2 backup system of a plurality of backup systems, said storage system coupled with said
3 plurality of backup systems via a storage area network, said method comprising:
4 said storage system receiving a command to copy said information,
5 wherein said command to copy is sent by said server;
6 said storage system finding an available backup system of said plurality of
7 backup systems; and
8 under control of said storage system, transferring said information to said
9 available backup system.
- 1 2. The method of claim 1 wherein said available backup system is
2 specified by said command.
- 1 3. The method of claim 1 wherein said command to copy is an
2 extended copy command (E-Copy).
- 1 4. The method of claim 1 wherein a target port of said storage system
2 receives said command to copy.
- 1 5. The method of claim 1 wherein said determining said available
2 backup system comprises, an initiator port of said storage system finding a target port of
3 said available backup system of said plurality of backup systems, said target port
4 specified by said command to copy .
- 1 6. The method of claim 1 wherein said determining said available
2 backup system comprises, a first initiator port of a plurality of initiator ports of said
3 storage system searching for an available backup system port.
- 1 7. The method of claim 6 wherein said determining said available
2 backup system further comprises, a second initiator port of said plurality of initiator ports
3 of said storage system searching for said available backup system port, when said first
4 initiator port cannot locate said available backup system port.
- 1 8. The method of claim 1 wherein said determining said available
2 backup system comprises:
3 determining one or more initiator ports belonging to a predetermined set
4 of ports of said storage system, wherein said predetermined set of ports of said storage

5 system comprises a target port of a plurality of target ports and said one or more initiator
6 ports and wherein said target port receives said command to copy; and
7 locating said available backup system from said one or more initiator
8 ports.

1 9. The method of claim 1 wherein said plurality of backup systems
2 are tape drives.

1 10. The method of claim 1 wherein said storage system is a Redundant
2 Array of Independent Disks (RAID) device.

1 11. A system for server free back up of information on a storage area
2 network comprising:
3 a server system for sending a command to backup said information;
4 a plurality of back-up systems; and
5 a storage system comprising said information and responsive to said
6 command, finding an available back-up system of said plurality of back-up systems for
7 backing up said information, wherein said storage system is coupled with said server
8 system and said plurality of back-up systems.

1 12. The system of claim 11 wherein after locating said available back-
2 up system, said storage system backs up said information to said available back-up
3 system independent of said server system.

1 13. The system of claim 11 wherein said available back-up system is
2 selected from a group consisting of a tape library, Hard Disk Drive, Zip Drive, DVD
3 storage, CD storage, or another like storage system.

1 14. The system of claim 11 wherein said sending said command to
2 backup said information includes sending an Extended Copy Command, having a
3 parameter list, to a target port of said storage system.

1 15. The system of claim 11 wherein said storage system further
2 comprises:
3 at least one disk storage unit, comprising said information; and

4 a disk controller system comprising a plurality of ports and coupled to said
5 disk storage unit, wherein said plurality of ports, comprises a first target port for receiving
6 said command to backup from said server and one or more initiator ports for finding a
7 second target port on said available back-up system; and

8 wherein when a selected initiator port of said one or more initiator ports
9 can connect to said second target port, sending said information to said second target port
10 from said selected initiator port.

1 16. A system for copying information from a storage system to a
2 backup system port of a plurality of backup system ports, said storage system coupled
3 with said plurality of backup system ports via a storage area network, said system
4 comprising:

5 means for said storage system receiving an E-copy command to backup
6 said information, wherein said E-copy command is sent by said server;

7 means for said storage system finding an available backup system port of
8 said plurality of backup system ports; and

9 under control of said storage system, means for transferring said
10 information to said available backup system port.

1 17. A storage system for executing an Extended Copy (E-Copy)
2 command from a server, said storage system coupled with a plurality of back-up devices
3 over a storage area network, comprising:

4 a disk for storing data from said server;

5 a target port for receiving said E-Copy command, including a parameter
6 list, wherein said parameter list lists said data for backup to a back-up device port of a
7 backup device of said plurality of back-up devices; and

8 an initiator port responsive to said E-Copy command for connecting to
9 said back-up device port on said storage area network to backup said data to said backup
10 device.

1 18. The storage system of claim 17 wherein said storage area network
2 (SAN) comprises Fibre Channels.

1 19. The system of claim 17 wherein said storage area network
2 comprises an Ethernet network.

1 20. The system of claim 17 wherein said storage area network
2 comprises a TCP/IP network.

1 21. The system of claim 17 wherein said storage area network
2 comprises a Virtual Private Network (VPN).

1 22. The system of claim 17 wherein said parameter list includes a byte
2 used to distinguish one vendor's parameter list format from another vendor's parameter
3 list format.

1 23. A RAID system for executing an E-Copy command from a server
2 system, comprising:
3 a plurality of disk units for non-volatile storage of data and
4 at least on disk controller system coupled to said plurality of disk units for
5 receiving and executing said E-Copy command from said server, said disk controller
6 system comprising:
7 a target port coupled to a first microprocessor, said port receiving said E-
8 Copy command from said server;
9 an initiator port coupled to a second microprocessor, said initiator port for
10 connecting to a target port of a backup device; and
11 a shared memory coupled to said first and second microprocessors for
12 exchanging E-Copy command information; and
13 wherein when said disk controller system executes said E-Copy command
14 without intervention from said server system.

1 24. The RAID system of claim 23 wherein said first processor runs
2 concurrently with said second processor.

1 25. A method for a storage system of backing up said storage system's
2 data according to an extended copy instruction received from a host computer, said
3 method comprising;
4 responsive to said extended copy instruction creating a bitmap table stored
5 in memory;
6 concurrently polling said memory by a plurality of concurrently running
7 processors;

8 when a processor of said plurality of concurrently running processors is in
9 said bitmap table, connecting to a backup device in a storage area network;

10 when said connecting is successful, backing up said storage system's data
11 to said backup device.

1 26. The method of claim 25 wherein a storage system includes a
2 plurality of non-volatile data storage elements.

1 27. The method of claim 25 further comprising:
2 when said connecting is unsuccessful, trying to connect with another
3 processor in said bitmap table; and
4 when said connecting is unsuccessful and there are no more processors in
5 said bitmap table, generating an error message.

1 28. The method of claim 25 wherein said bitmap is created based on a
2 port group.

1 29. A system for backing up data located on a storage system to a
2 backup device port of a backup system, according to an E-Copy command sent from a
3 server to said storage system, said system comprising:
4 a target job on a target microprocessor receiving said E-Copy command
5 via said target microprocessor's target port, and responsive to said E-Copy command puts
6 a parameter list for said E-Copy command in a shared memory;
7 a bitmap table created by said target job using a port group setting
8 retrieved from said shared memory, wherein said bitmap table gives a plurality of initiator
9 microprocessors that may start the E-Copy job.

10 an initiator microprocessor of a plurality of initiator microprocessors for
11 taking exclusive control of said shared memory, when said bitmap table is put in said
12 shared memory;

13 an initiator port associated with said initiator microprocessor for trying to
14 connect to said backup device port, wherein when said initiator port cannot connect to
15 said backup device port, then removing said initiator microprocessor from the bitmap
16 table; and

17 when said initiator port has failed to make a connection to said backup
18 device, another initiator port associated with another initiator microprocessor of said
19 plurality of initiator microprocessors tries to connect to said backup device port.

1 30. The system of claim 29 wherein if said initiator port connects to
2 said backup device port, then copying said data located on said storage system to said
3 backup system according to said parameter list.

1 31. A user interface for setting and modifying target and initiators ports
2 in a port group of a disk system, said port group comprising at least one target port and at
3 least one initiator port, comprising:

4 a field for selecting said port group, wherein only said target ports in said
5 port group are initially displayed in a target screen and said initiator ports in said port
6 group are initially displayed in an initiator screen;

7 a field for adding a port to as a target port to said port group; and

8 a field for adding a port to as an initiator port to said port group; and

9 wherein only ports within said port group communicate with each other.

1 32. A graphical user interface (GUI) for determining a port group from
2 a plurality of ports in a disk system, said GUI comprising:

3 items on a display representing target ports and initiator ports of a disk
4 system;

5 a connection graph showing in graphical format the connections between
6 servers, storage systems and back-up devices; and

7 a user input device for selecting a target port and an indicator port that are
8 part of said port group.

1 33. A computer program product stored in a computer readable
2 medium for copying information from a storage system to a backup system of a plurality
3 of backup systems, said storage system coupled with said plurality of backup systems via
4 a storage area network, said computer program product comprising:

5 code for said storage system receiving a command to copy said
6 information, wherein said command to copy is sent by said server;

7 code for said storage system finding an available backup system of said
8 plurality of backup systems; and

- 9 under control of said storage system, code for transferring said information
- 10 to said available backup system.